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10/772,683	02/04/2004	Michael H.E. Ware	01-795	5117

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EXAMINER	
VAN, LUAN V	
ART UNIT	**PAPER NUMBER**
1753	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/772,683	WARE ET AL.	
	Examiner	Art Unit	
	Luan V. Van	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) *1-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/4/04*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of 13-44 in the reply filed on 10/19/05 is acknowledged.

Claim Objections

Claims 16, 19, 22, 25, 34, 35 and 41 are objected to because of the following informalities:

In claims 16, 19, 22, 25, 34, the word "and" should be revised to -- or --. The current claims as written appear to mean that all the compounds are included when it is believed that the applicant intended to select one compound or the suitable alternative. The phrase can be also be revised to "one selected from a group consisting of..." The claims are prosecuted assuming "or" is used.

In claims 35 and 41, "Amps/f^2" should be revised to --Amps/ft^2 --.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 13-16, 19, 20, 22-24, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Brenner et al.

Regarding claims 13, 14, 20, and 22-24, Brenner et al. teach a plating bath, comprising: a plating solution, cobalt metal ions (figure 9) contained within said plating solution, chloride ions (figure 9) contained within said plating solution, phosphorous ions (figure 9) contained within said plating solution, an oxidizing agent (or boric acid, column 3 lines 21-25) contained within said plating solution, and a hardening agent (or phosphorous acid, figure 9) contained within said plating solution. The elements are present in the solution as ions, since they are soluble.

Regarding claim 15, Brenner et al. teach the cobalt metal content of said plating solution is about 39 g/L (computed from the 180 g/L of cobalt chloride in figure 9), or about 5.2 oz/gal, which is within the range of the instant claim.

Regarding claims 16 and 19, Brenner et al. teach a phosphorous-cobalt alloy plating solution comprising of cobalt chloride as a cobalt salt and a chloride compound.

Regarding claims 26 and 27, Brenner et al. teach a phosphorous-cobalt alloy plating solution comprising of phosphoric acid (figure 9).

Claims 36, 37 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Sturgill et al.

Regarding claims 37 and 39, Sturgill et al. teach a process for plating, comprising the steps of: providing a substrate having a surface, cleaning and preparing (paragraph 753-770) said surface during a pretreatment during a cobalt-phosphorous plating process, applying a cobalt-phosphorous-boron coating (paragraph 771) to said surface and finishing said surface during a post treatment process (paragraph 773-781). In addition, Sturgill et al. teach that "oxidation of the cobalt to the trivalent state may also be achieved in the conversion coating solution through electrolytic means" (paragraph 54). With respect to claim 39, providing an anode and applying a current are inherent steps in an electroplating process.

Regarding claim 37, Sturgill et al. teach plating substrate which has a catalytically active surface, since the surface is pretreated.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Kedward et al.

Brenner et al. teach the solution as described above in addressing claim(s) 13.

The difference between the reference to Brenner et al. and the instant claims is that the reference does not explicitly teach using cobalt chips or cobalt balls as a source for the cobalt metal ions.

Kedward et al. teach using cobalt chips as a source for the cobalt metal ions in a cobalt plating solution (column 4 lines 22-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution of Brenner et al. by using cobalt chips

or cobalt balls as a source for the cobalt metal ions.as taught by Kedward et al., because cobalt chips or cobalt balls can be easily dissolved in a plating solution.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Sturgill et al.

Brenner et al. teach the solution as described above in addressing claim(s) 13.

The difference between the reference to Brenner et al. and the instant claims is that the reference does not explicitly teach using perborate.

Sturgill et al. teach using perborate as suitable oxidizers, which function to repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier (paragraphs 51-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution of Brenner et al. by using the perborate of Sturgill et al., because it would repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Beebe, Jr. et al.

Brenner et al. teach the solution as described above in addressing claim(s) 13.

The difference between the reference to Brenner et al. and the instant claims is that the reference does not explicitly teach using sodium phosphite or hypophosphite, although Brenner et al. teach that phosphites are the most satisfactory source of phosphorous (column 2 lines 23-29).

Beebe, Jr. et al. teach a method of plating a cobalt-phosphorous layer with the characteristics of "long fatigue life and high load carrying capacity in addition to ... good corrosion resistance" (column 1 lines 23-28) for the fabrication of bearings and the like. In addition, Beebe, Jr. et al. teach that a typical cobalt-phosphorus plating solution comprises copper sulfate, sodium chloride and boric acids; a similar plating of cobalt-phosphorous can be suitably achieved by employing a solution comprising of cobalt chloride and sodium hypophosphite (column 4 lines 16-45).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution of Brenner et al. by using a solution comprising of sodium phosphite or hypophosphite as taught by Beebe, Jr. et al., because sodium phosphite or hypophosphite are suitable sources of phosphorous and are suitable for forming cobalt- phosphorous alloys.

Claims 28-31 and 35 rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Beebe, Jr. et al. and Sturgill et al.

Regarding claim 28, Brenner et al. teach a plating bath, comprising: cobalt chloride (figure 9) contained within said plating solution, boric acid (column 3 lines 21-25) contained within said plating solution, phosphoric acid, and phosphorous acid having a concentration of up to 160 g/L or about 21.3 oz/gal (figure 4) contained within said plating solution.

The difference between the reference to Brenner et al. and the instant claims is that the reference does not explicitly teach a solution comprising of copper sulfate and sodium chloride nor their concentration; perborate as the source of boron nor itsconcentration; nor the specific concentration of phosphorous acid of the instant claim.

Beebe, Jr. et al. teach method of plating a cobalt-phosphorous layer with the characteristics of "long fatigue life and high load carrying capacity in addition to ... good corrosion resistance" (column 1 lines 23-28) for the fabrication of bearings and the like. In addition, Beebe, Jr. et al. teach that a typical cobalt-phosphorus plating solution comprises copper sulfate, sodium chloride (with a concentration of 17 g/L or about 2.3 oz/gal, which is within the range of the instant claim) and boric acids; and that a similar plating of cobalt- phosphorous can be suitably achieved by employing a solution comprising of cobalt chloride and sodium hypophosphite (column 4 lines 16-45).

Sturgill et al. teach using perborate as suitable oxidizers, which function to repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier (paragraphs 51-53).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the solution of Brenner et al. by substituting cobalt chloride with copper sulfate and sodium chloride as taught by Beebe, Jr. et al., because copper sulfate and sodium chloride are suitable for plating cobalt-phosphorous alloys having high tensile strength and good corrosion resistance properties. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the solution of Brenner et al. by using the perborate of Sturgill et al., because it would repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier. With respect to the concentration of cobalt sulfate, perborate, and phosphoric acid, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentrations to within the ranges of the instant claim by routine experimentation in order to form a cobalt-phosphorous alloys having the desired tensile strength and corrosion resistance properties. Furthermore, changes in concentration will not support the patentability of subject matter unless there is evidence indicating such concentration is critical. It is not inventive to discover the optimal or workable ranges by routine experimentation (MPEP 2144.05).

Regarding claims 29 and 30, Brenner et al. teach using a pH of 0.5-2.0 (column 2 lines 30-35).

Regarding claims 31, Brenner et al. does not explicitly teach the solution having the specific surface tension of the instant claim. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have recognized that the solution of Brenner et al. would have the specific surface tension of the instant claim, because the solution produces a cobalt-phosphorous coating having similar tensile strength and corrosion resistance properties.

Regarding claim 35, Brenner et al. teach using a current density of 5-30 A/dm^2, equivalent to 50-300 A/ft^2 (column 5 lines 35-39).

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Beebe, Jr. et al. and Sturgill et al., and further in view of Du Rose.

Brenner et al., Beebe, Jr. et al., and Sturgill et al. teach the solution as described above in addressing claim(s) 28.

The difference between the references and the instant claims is that the references do not explicitly teach the solution having the specific temperature of the

instant claim, although Brenner et al. teach that increasing the bath temperature increases the cathode efficiency (figure 3).

Du Rose teach that the operating temperature of a typical bath, comprising of cobalt chloride or cobalt sulfate (column 6 lines 53-58), is in the range of about 130-150°F (column 8 lines 4-13). Du Rose further noted that this range of temperatures not critical, and that good deposits may be obtained at temperatures as low as 50°F or lower to as high as 180°F.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the combined solution of Brenner et al., Beebe, Jr. et al., and Sturgill et al. by operating within the temperature range of Du Rose, because such temperature range is suitable for depositing a corrosion resistant coating.

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Beebe, Jr. et al. and Sturgill et al., and further in view of Cook, Jr. et al.

Brenner et al., Beebe, Jr. et al., and Sturgill et al. teach the solution as described above in addressing claim(s) 28.

The difference between the references and the instant claims is that the references do not explicitly teach the solution using a platinized metal anode.

Cook, Jr. et al. teach that coating a metal anode with a noble metal, such as platinum, or noble metal oxide reduces the consumption rate of the noble metal and the anode (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the combined solution of Brenner et al., Beebe, Jr. et al., and Sturgill et al. by using the anode of Cook, Jr. et al., because using a platinized metal anode reduces the consumption rate of the noble metal and the anode.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Beebe, Jr. et al. and Sturgill et al., and further in view of Kedward et al.

Brenner et al., Beebe, Jr. et al., and Sturgill et al. teach the solution as described above in addressing claim(s) 28.

The difference between the references and the instant claims is that the references do not explicitly teach the solution using an anode comprising of colbalt chips or balls.

Kedward et al. teach using cobalt chips as a source for the cobalt metal ions in a cobalt plating solution (column 4 lines 22-33).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the combined solution of Brenner et al., Beebe, Jr. et al., and Sturgill et al. by using an anode comprising of cobalt chips or cobalt balls as taught by Kedward et al., because cobalt chips or cobalt balls can be easily dissolved in a plating solution.

Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sturgill et al. in view of Brar et al.

Sturgill et al. teach the method as described above in addressing claim(s) 36.

The difference between the reference to Sturgill et al. and the instant claims is that the reference does not explicitly teach using dry abrasive blast.

Brar et al. teach using dry abrasive blast in order to increase the hardness of a bearing surface (column 3 lines 14-26) prior to forming a wear resistant coating thereon.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Sturgill et al. by using dry abrasive blast as taught by Kedward et al., because it would increase the hardness of a metal

surface, and because it would roughen a metal surface to improve the adhesion and uniformity of a plated metal coating on the surface.

Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sturgill et al. in view of Brenner et al.

Sturgill et al. teach the method as described above in addressing claim(s) 36.

The difference between the reference to Sturgill et al. and the instant claims is that the reference does not explicitly teach the steps of removing the mask nor baking the deposited coating. Although Sturgill et al. does not explicitly teach the step of removing the mask after a coating has been deposited, removing a mask would have been obvious to one having ordinary skill in the art when its function is no longer desirable, since a mask is used for protecting areas where the coating is not desired during the electroplating process.

Brenner et al. teach baking a cobalt -phosphorous coating to increase its hardness (i.e., wear resistance). (Column 5 line 73 -- column 6 line 4)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Sturgill et al. by baking a cobalt -

phosphorous coating as taught by Brenner et al., because baking a cobalt - phosphorous coating would increase its hardness.

Claims 41-42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Sturgill et al., Brar et al., Cook, Jr. et al., and Beebe, Jr. et al.

Regarding claim 41, Brenner et al. teach a method and plating bath, comprising: cobalt chloride (figure 9) contained within said plating solution, boric acid (column 3 lines 21-25) contained within said plating solution, phosphoric acid, and phosphorous acid having a concentration of up to 160 g/L or about 21.3 oz/gal (figure 4) which is within the range of the instant claim. Brenner et al. teach baking a cobalt -phosphorous coating to increase its hardness (i.e., wear resistance). (Column 5 line 73 -- column 6 line 4). Brenner et al. teach using a current density of 5-30 A/dm^2, equivalent to 50-300 A/ft^2 (column 5 lines 35-39). Brenner et al. teach a cobalt -phosphorous coating having up to 10% phosphorus (column 4 lines 31-38). Although Brenner et al. does not explicitly teach the concentration a boron, a cobalt -phosphorous coating plated by a solution comprising of boric acid as a source of boron as taught by the one would inherently comprise a small percentage of boron as impurities.

The difference between the reference to Brenner et al. and the instant claims is that the reference does not explicitly teach providing and pretreating an aircraft

component; specifically using dry abrasive blast in the pretreatment; providing a solution comprising of copper sulfate and sodium chloride nor their concentration; perborate as the source of boron nor itsconcentration; the specific concentration of phosphorous acid of the instant claim; using a platinized metal anode; nor removing the mask.

Sturgill et al. teach a process for plating, comprising the steps of: providing a aircraft component substrate having a surface (paragraph 4), cleaning and preparing (paragraph 753-770) said surface during a pretreatment during a cobalt-phosphorous plating process, wherein said pretreatment comprises degreasing, masking, alkaline cleaning, acid activity (such as deoxidizing) (paragraph 753-770), applying a cobalt-phosphorous-boron coating (paragraph 771) to said surface and finishing said surface during a post treatment process (paragraph 773-781). Sturgill et al. teach using perborate as suitable oxidizers, which function to repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier (paragraphs 51-53). In addition, Sturgill et al. teach that "oxidation of the cobalt to the trivalent state may also be achieved in the conversion coating solution through electrolytic means" (paragraph 54). Providing an anode and applying a current are inherent steps in an electroplating process. Although Sturgill et al. does not explicitly teach the step of removing the mask after a coating has been deposited, removing a mask would have been obvious to one having ordinary skill in the art when its function is no longer desirable, since a mask is used for protecting areas where the coating is not desired during the electroplating process.

Brar et al. teach using dry abrasive blast in order to increase the hardness of a bearing surface (column 3 lines 14-26) prior to forming a wear resistant coating thereon.

Beebe, Jr. et al. teach method of plating a cobalt-phosphorous layer with the characteristics of "long fatigue life and high load carrying capacity in addition to ... good corrosion resistance" (column 1 lines 23-28) for the fabrication of bearings and the like. In addition, Beebe, Jr. et al. teach that a typical cobalt-phosphorus plating solution comprises copper sulfate, sodium chloride (with a concentration of 17 g/L or about 2.3 oz/gal, which is within the range of the instant claim) and boric acids; and that a similar plating of cobalt- phosphorous can be suitably achieved by employing a solution comprising of cobalt chloride and sodium hypophosphite (column 4 lines 16-45).

Cook, Jr. et al. teach that coating a metal anode with a noble metal, such as platinum, or noble metal oxide reduces the consumption rate of the noble metal and the anode (abstract).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Brenner et al. by pretreating the surface of the substrate, because it would improve the adhesion and uniformity of a plated metal coating on the substrate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the

method of Brenner et al. by using the perborate of Sturgill et al., because it would repair a scratch on a coating by oxidizing the metal in the presence of water, and quickly reforming an oxide barrier.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of Brenner et al. by using dry abrasive blast as taught by Kedward et al., because it would increase the hardness of a metal surface, and because it would roughen a metal surface to improve the adhesion and uniformity of a plated metal coating on the surface.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of Brenner et al. by using the anode of Cook, Jr. et al., because using a platinized metal anode reduces the consumption rate of the noble metal and the anode.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have further modified the method of Brenner et al. by substituting cobalt chloride with copper sulfate and sodium chloride as taught by Beebe, Jr. et al., because copper sulfate and sodium chloride are suitable for plating cobalt-phosphorous alloys having high tensile strength and good corrosion resistance properties.

With respect to the concentrations of the chemical compounds, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentrations to within the ranges of the instant claim by routine experimentation in order to form a cobalt-phosphorous alloys having the desired tensile strength and corrosion resistance properties. Furthermore, changes in concentration will not support the patentability of subject matter unless there is evidence indicating such concentration is critical. It is not inventive to discover the optimal or workable ranges by routine experimentation (MPEP 2144.05). With respect to providing the coating on an aircraft substrate, such limitation is an intended use of the instant invention and, thus, is not given patentability weight.

Regarding claim 42, a plating tank is inherently provided for holding the plating solution.

Regarding claim 44, although Brenner et al. does not explicitly teach the plating rate, Brenner et al. teach that increasing the bath temperature increases the cathode efficiency (figure 3). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the rate of deposition by changing the parameters of the plating solution, such as temperature, current density and concentrations, through routine experimentation in order to form a cobalt-phosphorous alloys having the desired tensile strength and corrosion resistance properties.

Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brenner et al. in view of Sturgill et al., Brar et al., Cook, Jr. et al., Beebe, Jr. et al., and further in view of Du Rose.

Brenner et al., Sturgill et al., Brar et al., Cook, Jr. et al., and Beebe, Jr. et al. teach the method as described above in addressing claim(s) 41. The difference between the references and the instant claims is that the references do not explicitly teach the solution having the specific temperature of the instant claim, although Brenner et al. teach that increasing the bath temperature increases the cathode efficiency (figure 3).

Du Rose teach that the operating temperature of a typical bath, comprising of cobalt chloride or cobalt sulfate (column 6 lines 53-58), is in the range of about 130-150°F (column 8 lines 4-13). Du Rose further noted that this range of temperatures not critical, and that good deposits may be obtained at temperatures as low as 50°F or lower to as high as 180°F.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the combined method of Brenner et al., Sturgill et al., Brar et al., Cook, Jr. et al. and Beebe, Jr. et al. by operating within the temperature range of Du Rose, because such temperature range is suitable for depositing a corrosion resistant coating.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LVV
11/25/05

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SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700